

**CLAIMS**

What is claimed is:

- 1        1.     A method for reducing levels of residual halogen and Group IIIb metals in a crude  
2     poly( $\alpha$ -olefin) polymerized in the presence of a catalyst comprising the halogen and Group  
3     IIIb metals, wherein the method comprises:
  - 4              A)     washing the crude poly( $\alpha$ -olefin) with water;
  - 5              B)     separating the aqueous and organic phases;
  - 6              C)     then adding an adsorbent selected from the group consisting of magnesium  
7     silicates, calcium silicates, aluminum silicates, aluminum oxides, and clays to the organic phase  
8     to form a slurry;
  - 9              D)     heating the slurry under reduced pressure at a temperature of at least about  
10    180° C for at least about thirty minutes; and then
  - 11          E)     separating the adsorbent from the slurry.
- 1        2.     The method of claim 1 wherein the halogen is selected from the group consisting of  
2     chlorine, bromine, and mixtures thereof.
- 1        3.     The method of claim 2 wherein the halogen is bromine.
- 1        4.     The method of claim 1 wherein the Group IIIb metal is aluminum

**0204-PA**

1       5.     The method of claim 1 wherein the adsorbent is a magnesium silicate.

1       6.     The method of claim 1 wherein the heating step is continued for at least about 90  
2       minutes.

1       7.     The method of claim 1 wherein the heating step is continued for at least about 180  
2       minutes.

1       8.     The method of claim 1 wherein the adsorbent is employed at a level of at least about  
2       0.4 eq. metal/ eq. halogen.

1       9.     The method of claim 1 wherein the adsorbent is separated from the slurry by filtration.

1       10.    A method for reducing levels of residual bromine and aluminum in a crude poly( $\alpha$ -  
2       olefin) polymerized in the presence of a catalyst comprising the bromine and aluminum,  
3       wherein the method comprises:

4           A)     washing the crude poly( $\alpha$ -olefin) with water;

5           B)     separating the aqueous and organic phases;

6           C)     then adding about 0.4 eq. Mg/ eq. halogen of a magnesium silicate to the  
7       organic phase to form a slurry;

**0204-PA**

- 8           D)     heating the slurry under reduced pressure at a temperature of at least about  
9     180° C for at least about ninety minutes; and then  
10          E)     filtering the magnesium silicate from the slurry.